THE BOSTON
MEDICAL AND SURGICAL JOURNAL.

VOL. XCVIII. — THURSDAY, MARCH 28, 1878. — NO. 13.

LECTURES.

BOSTON CITY HOSPITAL: CLINICAL LECTURE NO. IV.

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Malignant Stricture of the Rectum. — GENTLEMEN: We have here a case which, in the direction of diagnosis, is exceedingly interesting. As yet I have not examined the patient, but propose to do so now, under ether. She is a stout, middle-aged woman, short of stature, and for the past six months has been in gradually declining health. Her chief symptom is constipation, which has been the cause of hæmorrhage attendant upon the severe straining at stool. She tells us that on passing her finger into the rectum she finds a tumor, which *she* thinks is a pile, the only symptom of which is the bleeding on defecation. Now, the question is, What is the matter? To explore and examine the rectum is so easy that we shall have no difficulty in reaching the morbid growth. I think it best to put the patient into the position for Sims's speculum, which is as useful in the rectum as in the vagina. We place her in the semi-prone attitude, the left hand behind the back, the pelvis tilted up close to the edge of the bed, one leg flexed, and the shoulder held up to give the thorax sufficient play in breathing. This is the position for examination of both rectum and vagina. We take care to keep the face from falling into the pillow, as should always be done when a patient is under an anæsthetic. In examining the vagina with the Sims speculum, we draw back the rectum and coccyx, and thus get a good view of the vagina and uterus. In examining the bowel we draw back the coccyx by means of the speculum and secure just as good a view of the front and sides of the rectum. I now first introduce my finger into the vagina. The patient is unmarried, and has a well-developed hymen, which excludes any trouble in the vagina from child-bearing. The womb is small. Now I pass my finger into the rectum, by which procedure we can discover much. Just inside the margin of the anus are folds, swollen and of a violet color, probably hæmorrhoids and some congestion of the mucous membrane. Around the anus and rectum, near the sphincter, are neither growths nor pendulous masses, and a smooth, healthy condition extends up as far as three inches from the anus. The rectum here, as usual, is a large sac, and is normal. Above and beyond this portion of the rectum is a hard mass, in shape like a uterus, and, like it, has an opening with distinct lips. Judging by my memory of other similar cases, I have my own idea of the nature of this body. I now introduce the speculum, and first discover the reddish, gelatinous fluid, with a good deal of blood, of which the patient has complained. The morbid body has a large posterior and a small anterior lip. The folds of bowel around the body are precisely like the folds of vagina around the uterus, known as "Douglas's fold." As the tumor is not far from the anus probably we can bring it into sight, by using a large glass vaginal speculum. Beginning with a small one, in order to stretch the rectum, I try my different specula, and find that with none of them can I succeed in bringing the tumor into view. We will see what can be learned by using both hands, passing the finger of one into the vagina, of the other into the rectum. Per vaginam I find a large, hard, cylindrical mass, extending high up in the rectum, and not connected with the uterus, which is small and lies in front of the abnormal growth. There is no polyp in the rectum, no abscess, fissure, nor fistula. What is this body? It is a stricture of the rectum, forced downward like a prolapsed uterus. It is the rectum folded upon itself and thickened like the doubled finger of a glove. We have then a tumor between the mucous and muscular coats or upon the mucous membrane, at a point three inches up the rectum, but we do not know how high it extends. I will not positively say it is malignant, though it probably is cancerous. Having seen similar cases I speak knowingly. In a recent case, which I saw in consultation, I satisfied the surgeon (who had been unable to reach the obstruction with the finger) by means of the Simon method, namely, introducing the whole hand into the rectum. I found the conditions the same as in this case. The patient gradually failed and died. The growth was removed post mortem, and sent to me for examination. It proved to be malignant in character, and there was infiltration of cancer in its neighborhood.

We cannot operate in this case without killing the patient, because the disease extends above the peritoneal reflection. The treatment must be palliative, namely, good nourishment, laxatives, and the prevention of hæmorrhage. In a few weeks we probably shall have to dilate the stricture by means of elastic bougies. In the case just mentioned I accomplished this by introducing my entire hand into the rectum, and then passing the bougie up into the stricture. By means of electricity we might possibly relax the stricture by causing absorption. This is a new operation which is sometimes used in organic stricture of the urethra. The current is passed down into the stricture through a protecting catheter. This and dilatation with bougies are all we can do locally. The patient will probably be worn out by the disease. In case of entire obstruction colotomy offers the only remaining relief.

Painful Subcutaneous Tumor. — I now bring before you a middle-aged woman, who enters the hospital because of a small tumor in the subcutaneous tissue of the lower third of the leg over the peroneus muscle. This body has existed for twenty years, and by its excessively painful character has given the patient great annoyance. I think it probably is a fibroid growth in which a nerve fibre has been caught, and hence the intense suffering. Making an incision over the tumor, I dissect it out gradually and carefully. As you may observe, it is hard, lobulated, pearly in color, and about as large as a small filbert. In the wound nothing more is to be felt.

This case is rather uncommon. I have previously had but one like it. This also was on the leg. The patient was a washerwoman, and for years had suffered quite severely from neuralgic pain in this spot. As I saw her frequently after the operation I can positively state that the operation cured the pain. This tumor will be preserved for microscopic examination. On section we may find an imbedded nerve fibre. We now simply close the incision with sutures. Sometimes these painful nodules are due to the presence of a foreign body inclosed in plastic tissue which has been thrown out around it.

Some years since there came under my care a woman who had over the lower ribs and beneath the left breast a small, exquisitely tender and painful lump, as large as a small hickory nut. This body had troubled her for five years. On making an incision to remove it I found a needle, whose presence had been entirely unsuspected. The patient was a dress-maker, and had been in the habit of keeping needles in her dress, and for convenience, over the left breast. A needle will prick into and enter the skin and travel still deeper with very little pain at the moment of puncture.

Double Fistula in Ano. — This young woman has anal fistulæ of three months' duration. In cases of this nature the first step is to find the internal opening of the fistulæ, and this we do by introducing a probe into the external aperture, and feeling for its point with the finger in the rectum. I have often succeeded in tracing the inner aperture of the fistula by injecting milk through the sinus and finding it in the rectum. The milk is a bland, innocuous fluid, distinct in color, and therefore useful for this purpose. As regards the treatment of these cases I am in favor of cutting, that is, laying open the sinus with one stroke of the knife.

My experience in the use of ligatures has been bad. In three cases in which I used the rubber ligature every one of the patients was kept quiet in bed, and in every case the treatment was followed by œdema, local abscesses, and excessive pain. Introducing my probe into these external openings, I find two fistulæ, directly in line with each other, there being one on each side of the bowel. The sinuses lead straight down into the rectum; the internal apertures are large, are situated just inside the sphincter muscle, and are also precisely opposite each other. Passing the speculum into the rectum I find the mucous membrane pale and quiet, showing no marked condition. Besides the external openings of the sinuses there are also several excoriated spots, which simulate fistulæ, but are only superficial ulcers. On the external genitals there is a single scar, and by the side of the entrance to the urethra a healing ulcer. There is undoubtedly a syphilitic history in this case.

By way of treatment I lay open the sinuses, and put the patient on specific remedies, beginning with one grain of calomel three times daily. We shall keep an oiled rag in the sinuses and anus in order that the fistulæ may heal from the bottom. To arrest hæmorrhage we pack the rag with small sponges, and apply a T-bandage over all.

Croup; Tracheotomy. — This little child, four years of age, has just been brought into the hospital by his parents and attending physician. He has croup, which came on gradually three days ago. There has been but little fever and no convulsive coughing. The child lost his voice yesterday, and as yet is but little exhausted by the disease. The face is sub-livid, but the nails are pink. Respiration begins to be difficult. There is considerable retraction of the lower ribs in breathing; the intercostal spaces are drawn in, and at the ensiform cartilage you see a deep pit with every inspiration. Both inspiration and expiration are noisy, wheezing, and rough. These signs are characteristic of an obstruction in the larynx.

The patient was brought to us for operative treatment, and I shall perform tracheotomy at once. In these cases the operation is almost always deferred until too late. If tracheotomy were done early, when the distress in respiration first became evident, more lives would be saved.

We first put the child under ether. In uncovering the throat I notice that with each expiration the thymus gland and loose tissue of the anterior mediastinum bulge up above the sternal notch. We should be careful to avoid this spot in making the incision. In a short-necked child this is sometimes difficult, for, if we can, we have to keep between the thyroid gland above and the thymus gland below. If we cut too near the sternum we endanger the horizontal veins, which are very large and constitute the innominata. The trachea, too, lies deeper near the sternum than it does higher up.

After many trials of dilators in stretching open the sides of the cut trachea, I have latterly abandoned them, and prefer two short, sharp tenacula on long handles, such as are used in operations on the palate. Making an incision in the middle line, and, if possible, avoiding the thyroid veins, we dissect down nearly to the child's trachea. Now insert one hook into the left side of the trachea, parallel to it, and with the point directed upward; then insert a second hook into the right side of the trachea in the same way; give the left hook to your assistant to hold, take the other yourself; draw the trachea forcibly upward; plunge in your knife, and, cutting upward, divide three or four tracheal rings. Still drawing on the hooks you open the sides of the incision and insert the tube without difficulty. In this case as the knife opens the trachea there is a forcible gush of thick mucus with some distinct croupous membrane. There is but little hæmorrhage. We now insert the tracheal tube, and keep it in place by means of tapes passed around the neck. As our rooms are heated by steam, we have only to tap the radiator in order to secure a constant discharge of vapor into any room we may select. We thus convert an ordinary chamber into a steam closet. We shall put this boy into such a room, and so give him a moist atmosphere.

Lupus. — This middle-aged man has a chronic affection, which, as you will notice, has already proved very destructive. The entire soft tissue of the right half of the nose is gone; so are the septum and the vomer.

I think the disease is lupus, because as it advances it leaves cicatrices in its wake. My experience with rodent ulcer is that it makes steady progress, and never repairs or cicatrizes what it leaves behind; whereas, in this case, as new tissue becomes ulcerated the old ulcerations cicatrize.

On the left side of the nose the tissue has healed up to the granulating edge of the cavity on the other side. On the right are tubercles and ulceration, which are advancing into the nasal cavity, but the tissue of the face behind this mass has healed.

There is only one thing to be done, and that is to destroy the unhealthy growth with the galvano-cautery or by caustics. In this case we will employ the solid nitrate of silver. We first, however, etherize the patient, and then oil the face in order to prevent staining and injury by any of the caustic which may flow down from the morbid part. This mass which forms the real disease is soft, boggy, and rotten. I plunge the caustic into it in all directions, in some places going to the bone. There is a small tubercle on the left side of the nose. We bore into this with the nitrate until the bone is reached. Fomentations will hasten the separations of the sloughs.

TREATMENT OF DECIDUOUS TEETH.

BY WILLIAM HERBERT ROLLINS.

Dr. R. T. Stack, in his thesis last year at the Harvard Dental School, considered the important bearing which the death of the pulps of the deciduous teeth may have upon the eruption of the permanent set. From specimens obtained at the dispensary and at the infirmary of the Harvard Dental School he showed conclusively that teeth with devitalized pulps had proved sufficient obstacles to prevent the eruption of their permanent successors. On the roots of these teeth with dead pulps were found polished facets, produced apparently by contact with the permanent teeth, the excavationes lunares having been almost polished out. I think this was the first positive evidence found which proved that teeth with devitalized pulps were less capable of undergoing absorption than teeth whose pulps were living. This discovery was of great importance from its direct bearing upon the treatment of children's teeth; Dr. Stack having shown that in the incisors, for example, a temporary tooth with a devitalized pulp may so change the position of the permanent one as to cause the latter to erupt inside of the arch, giving rise to a deformity which requires expensive apparatus to regulate.

Dr. Stack's conclusions were that a tooth with a devitalized pulp was not capable of undergoing absorption; that the loss of substance in these cases was caused by the action of pus or acid and acrid fluids, resembling in no way normal absorption, finding a parallel, so far as the pus went, in the loss of weight and specific gravity which occurs in osseous sequestra.

As an example he figured a tooth which had been extracted and replaced, but which never became firm, so was again removed. On this tooth were found rough places which did not indicate normal absorption, but were due to the erosion of pus or to decomposing oral secretions which collected in the socket around the tooth. I agree entirely with Dr. Stack in considering that temporary teeth with devitalized pulps are a very common, and by the profession unrecognized, cause of irregularity in the position of the permanent teeth; but I think he is mistaken when he states that absorption cannot take place in deciduous or in permanent teeth after the death of the pulp; of this, however, I shall speak later in this article, but first it seems desirable to mention other injuries which may result to the permanent teeth from allowing temporary teeth with devitalized pulps to remain in the jaws.

Although in the oral specialty the evidence with which to support any view is to a great extent traditional and not now accessible in printed form, yet it seems to me that those who think anything about the matter are nearly equally divided as to the treatment to be pursued with temporary teeth when the inflammation of the root membrane has resulted in the formation of an alveolar abscess.

I suppose that the general practitioner, judging from results of abscess formation in other parts of the bony frame-work of the body, would not have fallen into the error of thinking too lightly of alveolar abscess when connected with the temporary teeth; but orists, accustomed to see chronic alveolar abscess associated with the permanent teeth which resisted all attempts at cure, persisting without apparent injury for years and years, have unfortunately in too many instances come to think there is equal immunity from injurious consequences when the abscess is connected with the temporary teeth; yet I shall endeavor to prove that no such immunity does exist.

Those who retain the deciduous teeth, even after the formation of alveolar abscess, claim that no injury can result therefrom; that the inconvenience to the patient is less than the injurious contraction of the jaws which results from their removal, producing, as the latter does, a loss of masticating surface at a time when, if ever, the organism needs an efficient apparatus for comminuting the food. Those orists who do not hold this view claim that the nervous irritability produced by the constant inflammation of the root membrane, together with the ever-present tendency to imperfect mastication on account of the local pain caused by the process, more than outweigh other considerations.

Figures 10 and 11 show two views of a superior right bicuspid which was given to me by Mr. Bright, a student of the Harvard Dental School. The patient, a young lad, presented himself at the school infirmary on account of pain in the region of the right upper molars.

On examination the remains of a temporary molar were found, while between its labial roots projected this tooth imbedded in the soft tissues, yet coming away without the employment of decided force.

Figure 13 is a diagram to show the close relations which the roots of the temporary molars hold to the crowns of their permanent successors.

As absorption takes place upon the roots of the molar, the bicuspid, pushed forward by constant formation at its neck, becomes on all sides embraced by the former, separated only by a membrane thin in many places.

Now if the pulp of the molar dies, inflammation of the root membrane resulting, we shall have in almost every case the abscess formed around the apex of the palatine root; the result of this will be cessation of the dentine formation in the part of the papilla nearest this point; moreover, if the inflammation becomes extensive enough, this, together with the anatomical structure of the part which causes the pus to open on the labial wall, although this is much farther removed from the original seat of the inflammation than the palatine, will explain how the growing tooth becomes separated from the dentine papilla, with its final casting out from the system as a foreign body.

This was exactly what occurred here; the inflammation, at first localized, caused dentine formation to stop only at the point where the dentine papilla was near to the palatine root, so producing the difference in height between A and B in Figure 10, where A represents the part of the bicuspid nearest to the palatine root of the molar. At length the inflammation involved the whole surface of the dentine papilla, causing the dentine formation to cease forever.

I looked in vain for any mark of absorption upon the sections prepared from the bicuspid, so that whatever became of the dentine papilla it was evidently not converted into an absorbent organ.

I am inclined to ascribe a certain proportion, at least, of the cases of so-called dilaceration to inflammatory changes of the above-mentioned character, which do not go on to the destruction of the dentine-forming capacity, but simply stop this for a time at some point, or make it irregular, changing also the position which the formed portion of the tooth held to its germinal bed.

I do this the more gladly because the now employed explanation — that of mechanical violence — does not seem to be all sufficient when we consider how deeply in the jaw the growing tooth is placed; besides, we do not obtain, even on the most searching inquiry, a history which will explain how such violence could have been committed.

From the foregoing we have seen how deciduous teeth with devitalized pulps may be injurious to the permanent teeth otherwise than by preventing their eruption or causing them to appear in abnormal positions, and I think the observations are of immediate practical value, as they point out the necessity of more careful attention to the teeth of the first dentition.

Now, to accumulate evidence to prove that teeth with devitalized pulps can undergo true absorption, as distinguished from destruction from acrid and acid substances. At the outset of search it is plain that in the case of a temporary or permanent tooth with a dead pulp at the time of extraction there will be room for a difference of opinion as to whether the marks of absorption, if such be found on microscopical examination, were produced before or after the death of the pulp. Cases have come under my observation where I thought the absorption had occurred after the death of the pulp, yet in order to prove that this was possible I have taken teeth which had been extracted, the root and crown filled with gold, and again replaced, to be after years the second time removed. On these teeth, figures of which are given, were found marks that to the unaided eye looked like absorption.

The history of but one of these teeth will be given, as the others do not differ in any particular which concerns us here.

The tooth from which Figures 1, 2, 3, 14, were taken was presented to the Harvard Dental School Museum by Dr. Cogswell. Its owner was a male of middle age. The tooth was extracted for pulpitis, the decay being so extensive as to render filling out of the question. Finding a union of the roots, Dr. Cogswell decided to try replacing, as the tooth was of great importance, there being no other molars on that side of the inferior maxilla.

To see if the tooth would return into the socket easily it was pressed into place, after which it was removed from the mouth, the pulp extracted, the root and crown filled with gold, the ends of the united roots polished slightly, and then again placed in the socket, after having been out for three hours. The next day the tooth was employed in masticating beefsteak, while from the time of its replacement for five years and eleven days there was no sign of inflammation of the root membrane; but three days before its final removal, when it came away with the exercise of only slight force, it suddenly became very painful, preventing closure of the jaws, nor would the inflammation yield to any of the therapeutical agencies employed. This suddenly appearing pain and lameness occurs in a great majority of those teeth which after being replaced become firmly united with the body; in fact, Dr. Waters, who has had quite a number of these cases, has found this symptom in every one.

I consider this phenomenon of importance here, because it enables us to exclude pus or the products of the decomposition of the oral secretions as being the agents which produced the extensive loss of substance seen in the figures. Although pus burrows with extreme rapidity in the hard osseous tissue of the jaws (I have seen cases where in twenty-four hours a cavity had been made from the root of an incisor directly through the wall of the alveolus), yet it could not have been the agent here, for cutting away hard dentine would not have been moving along the line of least resistance.

In Figure 14 we have a view of a part of a section taken from the tooth shown in Figures 1, 2, 3; here plainly are to be seen the bitten-out edges — excavationes lunares — so characteristic of absorption in the deciduous teeth. Figures 15, 16, 17, show the same changes in other teeth.

Clearly, then, there has occurred in teeth with devitalized pulps absorption, which from the microscopical changes wrought by it cannot be distinguished from that absorption seen in deciduous teeth with living pulps; but if stronger proof is needed that these lunar excavations seen in teeth with dead pulps are produced, as they are admitted to be in teeth with living pulps, by the agency of living cells, a reference to Figure 17 will furnish it; for here the process of absorption taking place in a tooth that has been extracted and replaced after removal of its pulp has ceased at certain points, and a new formation of cementum-like tissue fills up the lunar excavations.

From the foregoing observations I consider it possible for absorption to take place in deciduous teeth after the death of the pulps; yet how shall we explain the fact pointed out by Dr. Stack, that these teeth have prevented the eruption of the permanent ones?

It is probable that inflammatory changes resulting from the death of the pulp of a deciduous tooth may so far weaken or destroy the thin membrane, which alone, at certain stages of development, intervenes between the most advanced portion of the permanent tooth and its temporary predecessor, that the former, driven forward by continued growth, may force its way through the weakened membrane, or advancing into the hiatus already created by suppuration may come in contact with the surface of the root of the temporary tooth, making absorption forever impossible at this point, although it might go on in other portions of the root.

Figure 12 is drawn from a microphotograph of one of the specimens of Dr. Stack; from A to B extends the polished surface, evidently too long to have been at one time created by the convex outer surface of an incisor. I presume that as the part of the root of the temporary tooth with which the crown of the permanent tooth came in contact was polished, the latter, pushed forward by growth, slid upon the smooth surface of the inclined plane, and the polishing process went on again a little lower down, producing in time the extended facet seen in the drawing.

Summary. I consider, first, Dr. Stack to have been the earliest observer who recognized the significance of the polished facets found upon the roots of the deciduous teeth; second, that he was also the first to show that a deciduous tooth with a dead pulp proved a great obstacle to the eruption of the permanent successor.

I think, however, that his statement of the impossibility of absorption taking place in teeth with dead pulps is incorrect, because absorption has taken place in teeth removed from the jaw and replaced after filling the root canal.

Inasmuch as a temporary tooth with a dead pulp has prevented the eruption of a permanent tooth, causing the latter when the former was removed to erupt in an abnormal position, it becomes important to take such care of the deciduous teeth as to prevent the pulps from dying, or if they die to see, as pointed out by the writer mentioned, that the teeth are removed before they can injure the permanent teeth by turning them from their proper course toward eruption.

In addition, it becomes of much importance that when inflammation of the root membrane goes on to the formation of an abscess that these teeth should be treated so as to keep the inflammation from becoming extensive enough to involve the dentine papilla of the permanent tooth. If the inflammation cannot be controlled, then the tooth must be ex-

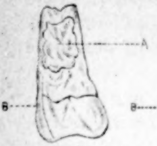

Fig. 1.

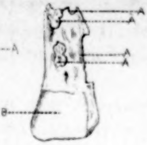

Fig. 2.

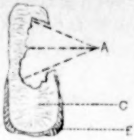

Fig. 3.

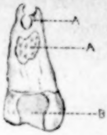

Fig. 4.

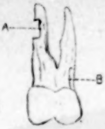

Fig. 5.

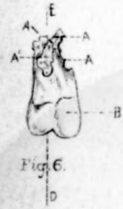

Fig. 6.

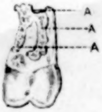

Fig. 7.

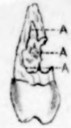

Fig. 8.

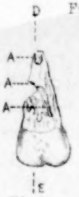

Fig. 9.

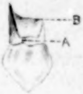

Fig. 10.

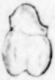

Fig. 11.

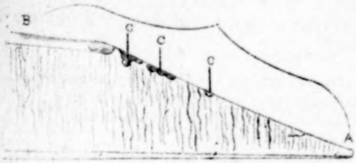

Fig. 12.

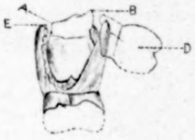

Fig. 13.

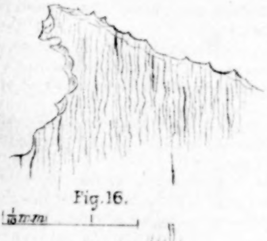

Fig. 16.

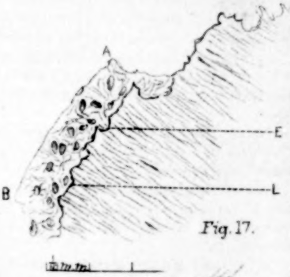

Fig. 17.

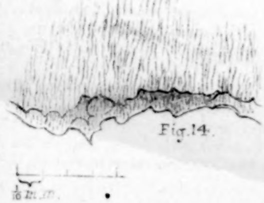

Fig. 14.

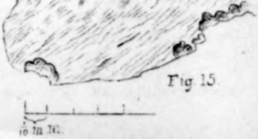

Fig. 15.

M. W. Phillips-William Herbert Rollins, Ad. Nat. Del.

BUFFORD'S LITH. BOSTON.

tracted, for the loss of masticating surface is of less consequence than the life of a permanent tooth; nor, so far as I know, is there a well-authenticated case of contraction of the arch following extraction of deciduous teeth.

It is the plain duty of the general physician, who sees more of children in early life than the orist, to keep careful watch of the temporary teeth, pointing out the necessity of having these teeth attended to before they begin to ache, for then in almost every case it is too late to save the pulp in a healthy condition.

I consider it the duty of the orist to treat all cases of exposure, or approach to exposure, of the dental pulps in children's deciduous teeth with the least irritating substances which will protect the pulp from the action of decay, in no case using arsenic or creosote to devitalize the pulps; because, although with a great majority of pulps which are exposed we cannot obtain a new formation of dentine over the denuded surface, yet we can keep them alive for years without such covering by simple non-irritating fillings, and while the pulp is alive I do not think the temporary tooth can be injurious to the permanent successor by causing dentine formation to stop.

FIG. 1. Inferior right third molar extracted and replaced, after which it was worn five years and two weeks without being lame until three days before last extraction. A is a large cavity formed by absorption after the tooth was replaced. B, gold filling.

FIG. 2. Another view of the same tooth. Letters as before.

FIG. 3. Section of the same tooth, to show the extent of the cavity A in Figure 1. C, dentine. E, enamel.

FIGS. 4, 5. Two views of the same tooth, which was extracted and replaced, but after being used two years was again removed. Letters as in former figures.

FIGS. 6, 7. Two views of a tooth which was extracted and replaced. Letters as before.

FIGS. 8, 9. A reinstated molar. Letters as before.

FIGS. 10, 11. Superior right bicuspid, in which formation ceased from the inflammation resulting from alveolar abscess on the root of the temporary molar. B shows the point where dentine formation first stopped, this being the part nearest to the palatine root of the molar.

FIG. 12. Drawn from a microphotograph of one of Dr. Stack's specimens. From A to B extends the polished facet produced by the permanent incisor. C, C, C, remains of excavationes lunares.

FIG. 13. Diagram to show the relation of the tooth shown in Figures 10, 11, to the root of the temporary molar. A and B, as in Figure 10. E, the point where the abscess formed. D shows the position the bicuspid came to occupy as it was being pushed out of the system.

FIG. 14. Section from tooth shown in Figures 1, 2, 3, shows marks of absorption. Section corresponds to the deep surface of the cavity A in Figures 1 and 3.

FIG. 15. A section from tooth shown in Figures 4 and 5. Plainly to be seen are the marks of absorption.

FIG. 16. Section through line D E, Figures 6 and 7, perpendicular to surface shown in Figure 6. The lunated edge corresponds to the deep surface of the cavity A in Figure 6.

FIG. 17. Section through the line D E, Figure 9, perpendicular to the surface of Figure 9. The new formation of cement-like tissue, A B, corresponds to the deep surface of the cavity A in Figure 8. E L, excavationes lunares filled with cementum-like tissue.

INCURABILITY OF CONGENITAL COLOR-BLINDNESS.[1]

BY B. JOY JEFFRIES, A. M., M. D., BOSTON.

As most probably one person out of every twenty-five in the community is more or less color-blind, and as, besides the mortification or restricted sphere of employment this may entail, our lives and property are thereby endangered on railroads and vessels, the question of the curability of congenital color-blindness is one of considerable importance. Certainly the color-blind railroad employé or pilot should not be dismissed from service if he can be cured of his defect.

It has been till lately universally admitted by ophthalmic surgeons and physiologists that congenital color-blindness was incurable by any known means. In August, 1874, Dr. A. Favre, of Lyons, France, reported to the French Congress for the Advancement of Science, at Lille, some observations which seemed to him to prove that congenital color-blindness was curable both in children and adults by exercising the chromatic sense.[2] Dr. Favre has for the last twenty years or more, as consulting surgeon of the Paris-Lyon-Mediterranean railroad company, pressed the necessity of examining all railroad employés for color-blindness, led so to do principally by the results of Wilson and Potton. He has succeeded in inducing other roads to adopt similar precautions, and deserves great credit for his exertions. It is, therefore, due him to look carefully at his statements, as, if correct, they are of the utmost importance.

He reports the results in eleven different schools of the examination ot one thousand and two boys between the ages of four and fifteen. These their teachers tested by asking them to name the color of objects exhibited of five principal colors. The teachers reported to Dr. Favre that they found at least two hundred and eighteen defective in chromatic sense, and that almost all were perfectly cured by being repeatedly shown objects and told the names of their colors *till they were learned.* Amongst one hundred and thirty-eight girls, from seven to fourteen years of age, Dr. Favre himself found only two whom he regarded as color-blind. These girls, he remarks, were under excellent teachers, and a large number had passed through the *salles d'asile* where colors were taught.

Dr. Favre then says, "The examination of these several reports shows that many children of both sexes come into the *salles d'asile* and schools without a notion of the elementary colors. The number of children lacking in this sensation in the majority of boys' schools I have visited is from twenty to thirty per cent. This ratio diminishes in proportion as the attention of the scholars is directed by their teachers to colored objects. Certain exercises, the painting of plans, geographical cards, lessons in natural history, etc., have an evident influence on the scholars' progress in this sense. Amongst the girls, sewing-work, embroidery, the care of the clothing, the handling of flowers, much reduces at eight years of age the number of those who have difficulty in distinguishing one or more of the elementary colors. At this age the number of boys who make marked mistakes in naming colors is still quite large, and we have found that if the majority easily acquire a knowledge of colors, many of these need watchful and continued care, requiring to be examined periodically, so to speak, till we are assured of their cure. What is the best method to use in the schools? Experience may teach us further, but from our observations during the last five years we feel authorized to draw the following conclusions: Male and female teachers should be required (1) to question, separately, the scholars of their class as to the five elementary colors, and also as to white and black. (2.) To carefully record at the time of examination the scholar's replies against his name. (3.) The scholars who have made mistakes should be individually called twice a week, and the colors named before them; they should be questioned and taught till it is shown that they have acquired an exact notion of the elementary colors. (4.) There should be periodic examinations. (5.) Whenever occasion presents, the precise names of colored objects exhibited should be spoken before the whole class. (6.) An advanced course on colors should be given scholars destined for special professions, by the aid of Chevreul's color chart and the most commonly manufactured articles."

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[1] Read at the Suffolk District Medical Society, February 23, 1878.

[2] Le Traitement du Daltonisme dans les Écoles. Par A. Favre. Lyon. 1877.

"The treatment of color-blindness in the adult also has given us very conclusive results, which we have embraced in an unpublished article presented to the Academy of Science." Dr. Favre says again, elsewhere,[1] "I call for the introduction of exercises with colors in all the schools, in the army, in the marine, and on the railroads. I am persuaded that by the precautions I have indicated a great number of accidents may be avoided, and I hope to be so fortunate as to cause congenital Daltonism to be stricken from the nosological list."

Dr. Favre has here undoubtedly simply mistaken the lack of knowledge of the *name* of a color for a lack of *perception* of the color. In this mistake he has been confirmed by the rather extraordinary reports from his several friends who were teachers. These latter, I must at once insist, were wholly incompetent to decide whether their scholars were color-blind. We must of course first positively prove the existence of the defect before we can talk about having cured it. It is next to impossible for even an expert to decide whether a child is color-blind by simply asking him to name the color of pieces of paper or other objects. It is, on the other hand, very possible to teach him a name

[1] Résumé des Mémoires sur le Daltonisme. Présentés à l'Académie des Sciences. A. Favre. 1875.

which he shall attach to the object, as it would also be to teach a congenital blind person. These children, supposed color-blind, are reported as cured by more or less exercise with colors, according to their individual quickness and memory in catching and retaining their names. Those that were dull, inattentive, and forgetful required repeated exercises before they retained the names of colors which were seemingly readily forgotten. This is perfectly shown by the teachers' reports.

The reported percentage of defective color perception found would of itself throw much doubt on the method of testing. For instance, as many as thirty out of fifty and fifteen out of thirty-five children are reported having " no notion of color." But ten per cent. is a very large ratio even when we include all cases of only slight color-blindness. Now these children were from four to fifteen years of age. How many school-boys at this time of life know the names of five colors, or, having heard them, will apply them correctly when questioned, without being specially taught? We should probably find it very different with girls, as did Dr. Favre. They use the names of colors much more frequently, and have more to do with colored objects in dress, trimmings, etc.

Those of us who possess normal color perception know how difficult it is to tell the difference between light greens and blues. This formed a large class among these supposed defective children, and they were reported cured in four or five exercises. A further convincing proof of the inadequacy of the test employed, and of the disqualification of the teachers as examiners, is shown by their reporting children as confounding those colors which the color-blind never do; for example, red and violet. I would not of course deny that amongst these thousand children there were any color-blind. Proof to the contrary exists in the statement of one teacher who says, " I sometimes despaired of curing one child, six and a half years old, who, after sixty-five exercises, could not tell me a single color without hesitation. Eleven exercises more, however, cured this unexampled Daltonean, who began by first distinguishing green, and finished by not always calling red yellow when shown him." This child no doubt was color-blind, and took this length of time to learn the name of a color to be repeated whenever the same object was shown him. If alive, I am certain this boy is as color-blind now as then, and any test not calling for the use of names would undoubtedly prove it. Professor Helmholz, in his Physiological Optics (page 299, 1867), said, " As to the examination of the color-blind, simply asking them to name this or that color will naturally elicit but very little, since they are then forced to apply the system of names adapted to normal perception to their own perception, for which it is not adapted. It is not only not adapted because it contains too many names, but in the series of spectral colors *we* designate differences of tone as such, which to the color-blind are only variations of saturation or luminosity. It is more than doubtful whether what they call yellow and blue correspond to our yellow and blue."

The lack of practical value of tests for color-blindness which require the examined to name colors has been well shown these last two years in the search for defective color perception amongst the *personnel* of the armies, navies, and railroads of Europe. It seems strange that Dr. Favre should have been led to conclude that color-blindness was so frequent as thirty or forty per cent., or that it was curable by exercise with colors, since his experience with railroad employés has been very large. He probably was deceived by using with these latter tests calling only for the naming of colors.

At first sight it seems only natural that we should be able to improve our color perception by use, as we may sharpen our other senses by exercise. But in the color-blind there is a congenital defect or deficiency. With the ear we may learn to distinguish sounds whose vibrations come within the range of our scale, but no amount of instruction can make us hear a note above or below the vibratory scale of our ear. A little practice will enable the normal eye to discriminate between the lighter shades of green and blue, which at first it had confounded, but no amount of exercise with colors can cause the color-blind eye to perceive those colors as we do, to whose ethereal wave lengths or numbers it is not adapted. However much practice may cultivate the power of an organ, it can never give that organ a different or additional power. I admit that constant exercise may enable a person only partially color-blind to improve his capacity for discriminating colors, but even then I do not believe he has altered his color perception, but only supplemented it by additional means, as we so often see other senses, when deficient, supplemented. Whether we shall ever be able to cure color-blindness is another question I am not in position to decide. I desire here only to state my belief, shared in at present by all physiologists and ophthalmic surgeons, that it has not been and cannot be cured by exercise with colors. From Dr. Favre's valuable researches, and his well-known and recognized connection with the present great advance in the testing for color-blindness amongst railroad employés and elsewhere, his belief in the curability of this defect might have undue weight. It must be remembered that he stands alone in this. I have therefore endeavored to show how and why he was mistaken, as others also might well be.

As to the necessity and value of teaching the names of colors in the lower schools, I entirely agree with Dr. Favre. No better proof of it can be given than the reports of his teacher friends, who found twenty to thirty per cent. of their pupils who did not know the names of colors, or could not apply them. Such recreations as color teaching would be interesting and valuable, since most probably all marked cases of color-blindness would be detected, and a scholar thus be warned in time not to attempt work in after-life for which his defect unfits him, of which he cannot be cured by any now known means.

The palliation of color-blindness by the use of colored transparent media has proved of so little value that I will not discuss it here, as also the other even less successful methods of improving or correcting this congenital chromatic defect suggested by one or another in past years. I should perhaps not dwell on this point further, were it not that Dr. Favre's mistake might lead to dangerous consequences by quieting the fears of those whose attention had been roused to the necessity of testing for color-blindness. I therefore quote from one or two authorities in support of my opinion, and to show that not only is it incurable, so far as we yet know, but that it does not change with time. A congenital color-blind person dies so. Professor Wilson says:[1] —

"*Congenital* color-blindness is certainly incurable, and, when induced by injury or disease, it may become as irremediable as if it had been an inherited peculiarity; but certain forms of this affection from disease or injury are transitory, and admit of cure. So far as I can ascertain from the examination of the cases of congenital color-blindness within my reach, the amount of modification in the perception of colors, induced by age, is inappreciable, even though no allowance be made for that alteration in all the powers of vision which time produces on every eye. Thus, Dalton was certainly as color-blind at the Oxford meeting of the British Association in 1832, when he compared the color of his D. C. L. gown to that of the leaves of trees, as in 1792, when he first discovered his color-blindness;[2] nor did any change, so far as his associates were aware, occur in his perceptions of color up to his death in 1844. Mr. Milne, of Edinburgh, is still (October, 1854) as color-blind as he was when Mr. Combe described his case thirty years ago, and as he had been for years before his case was described. Professor N—— was examined as to his perception of color some thirty years since by Sir David Brewster, who has recorded his case. He writes me recently: 'I am under the impression that some change in appreciating colors took place in my eye between childhood and youth. As a child, red gooseberries seemed to me altogether blue, so far as I remember; latterly I have observed what I fancy red in this variety of fruit.' And again: 'I suppose sometimes that I can distinguish red in some objects, but probably this is from knowing that they are usually of this color.' But he adds: 'At any rate, I am quite sure I should make a dangerous railway signal man, as I most certainly would not know a red flag from a green one.' This gentleman further states, in answer to some queries, that *pink* still appears to him by daylight *blue* and by gas-light *green*, and that he continues to confound carmine-red by daylight with blue. There plainly has been nothing deserving the name of improvement in his case. Lastly, the Countess of D—— has not (in 1853) appreciably altered in her color-blindness since her peculiarities were described by Wallaston many years ago."

"Dr. K., a medical man, says: 'When a boy at school my attention was directed to my want of knowledge of color by finding I could not see what my father called the *bright-red* berries of the holly. When other children easily found out the trees which were loaded with ripe cherries, I never could, till I came so near the tree as to detect the form of the fruit. The discovery of this defect in vision distressed my father exceedingly, and he endeavored to cultivate in me a knowledge of color by giving me lessons in painting, making colored charts for me of the prismatic and other colors, wishing to believe that the defect resulted from want of education in color, not from a visual defect. I destroyed many a painting of flowers, etc., by putting on wrong colors, as blues for purples, green for some kinds of red, and yellow for others. I still remember the surprise he exhibited when he found I could not detect a red cloak spread over a hedge, across a narrow field; hedge and cloak appeared to me the same exact hue, and they do so to this day.'

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[1] Researches on Color-Blindness. By George Wilson, M. D. Edinburgh. 1855.

[2] "A most amusing account was given by Babbage of the incidents attending the presentation of Dalton at court. Firstly, he was a Quaker, and would not wear the sword, which is an indispensable appendage of ordinary court dress. Secondly, the robe of a doctor of civil law was known to be objectionable on account of its color, — scarlet, — one forbidden to Quakers. Luckily, it was recollected that Dalton was afflicted with the peculiar color-blindness which bears his name, and that as the cherries and the leaves of a cherry-tree were to him of the same color the scarlet gown would present to him no extraordinary appearance. So perfect, indeed, was the color-blindness that this most modest and simple of men, whose only pleasures were a pipe and a game of bowls, after having received the doctor's gown at Oxford, actually wore it for several days in happy unconsciousness of the effect he produced in the streets." — Scientific London, 1874, page 38.

"Dr. T., aged twenty-seven, early became aware of his inability to distinguish colors, and has cultivated painting in the hope of curing or diminishing his defect, but without any success. He has himself favored me with an account of his case, but as he very strongly realizes the want of a common language between himself and those who have not his defect in distinguishing colors, he regards this account as hopelessly imperfect.

"It is quite certain that dyers, painters, weavers, clothiers, and the members of other callings much conversant with color are not unfrequently color-blind. I myself have very recently been offered any 'reasonable fee' if I would cure a worthy working tailor of almost total inability to distinguish colors.

"These cases may suffice to illustrate the permanency of this affection of vision, but they are not singular. Among my color-blind acquaintances there are probably none who would not sacrifice a great deal to see perfectly; and nearly all have endeavored to cure themselves of their visual idiosyncrasy, but not one reports a cure, and the best educated and most observant among them are the most decided in declaring that they have given up all hopes of amendment.

"It is difficult to convince many that this conclusion is a just one. Those whose own sense of color is delicate, and who are led by taste or profession to live much among colored objects, are slow to believe that any eye can be so peculiar in its endowments as to make the blunders which the color-blind do, even in reference to what they call a 'staring' red or green. Such colorists insist that carelessness, indifference, or improper education lies at the bottom of the mistakes which the 'supposed' color-blind make, and profess themselves willing to undertake their cure, of which, however, they record no case.

"When we find an engraver, who for the greater part of his life has been gazing all day at paintings, purchasing a red window curtain for a green one; a tailor, whose eye has been for hours daily fixed on cloths of very varied colors, matching green tape with scarlet linen, at the risk of losing his situation; an experienced field geologist compelled, when surveying a red-sandstone district, to take a companion with him to point out where grass ends and sandstone begins; and a teacher of chemistry evading, as much as possible, the questions of his pupils concerning the colors of bodies, we cannot doubt that after education has done all that it can towards developing the sense of color in the color-blind, they remain as helplessly prone to make their characteristic blunders as before. A crowning example of this has recently presented itself to me. In the establishment of a painter and glass-stainer, who is an obstinate disbeliever in the existence of color-blindness, my attention was recently directed by his fellow-workmen to a youth who had been set to repaint the devices on the shafts of a sheaf of arrows. These devices, consisting of alternate circles of red and green, had not been effaced, but only dulled; yet the painter executed his task by painting all the *red* rings *green*, and all the *green* rings *red*. The case was remarkable for the direct reversal of the colors in question, and this by one who held them before him to compare, both on his palette and on the arrows. Yet the party who committed the mistake was an excellent draughtsman, much esteemed by his master, and surrounded at his daily work with splendid specimens of stained glass. This mistake which he made soon ceased to be a solitary one; for his fellow-workmen, having since its occurrence put him to the test, found him uncertain in his judgment of many colors, and on examining him I found him commit the characteristic errors of the color-blind. Here, then, was the possessor of an educated color-blind eye making such mistakes as no normal-eyed person, however uneducated his power of vision might be, could or would make. Education, then, can do nothing towards curing congenital color-blindness, nor in truth can anything else."

Dr. Goubert, in 1867, says as to treatment of color-blindness:[1] "I have here no more consoling words or fruitful resources to present. Whatever the symptoms characterizing this peculiar imperfection, it belongs to that large number which the divine art of Æsculapius is powerless to cure, perhaps even to mitigate. All ophthalmic surgeons are unanimous on this point."

Professor Holmgren, of the University of Upsala, Sweden, has very thoroughly discussed Dr. Favre's publications, and he is in position both theoretically and practically to test attempts to cure color-blindness by exercise with colors, etc. After citing from his pamphlets, he says:[2] "This does not materially change the point of view we have adopted and indicated. It will be admitted that to positively prove the curability of color-blindness it is indispensable to establish the fact, first, that the treatment was applied to persons who were proven color-blind; and secondly, that these same persons after treatment had perfectly normal color vision, or were not deficient in it. Dr. Favre's *brochure* does not give us sufficient proofs of this. In short, without denying, on theoretical or practical grounds, the curability of color-blindness, we must hold that as yet no positive proof of it has been furnished.

"We, on our part, have not yet seen the result of a systematic exercise in learning colors pursued months or years; but the observations we have made on the exercise of the color-blind and their general effects may not be without interest, and throw some light on the importance of such exercise. We have said that the color-blind railroad employés learn to distinguish the flag signals in common use, and rarely make a mistake when examined especially on this point. Does this result depend on the training, and in what way? The color-blind who are not railroad employés can answer this. If we show them the ordinary flags (green and red) one after the other, they will nearly always name one or the other wrongly, and often both, and even sometimes frankly admit they do not know the true names of the colors. But if we show them the two flags at the same time, and ask which is green and which red, they at once see a difference; and, having fixed the name in their memory, they no longer make mistakes, but will tell the true name of the colors, even when shown one flag after the other. From this we see how the color-blind railroad employé has learned to distinguish the flags.

"But, after all, what have they learned, and what, strictly speaking, have they gained, by such recognitions? If we ask a color-blind person who is intelligent and honest, and who has no interest in concealing his fault, he will openly admit that he has no idea of the color itself, but that he notices a sensible difference in that the green flag is darker to his eye than the red. At the next trial he will make the same mistake if the first flag is shown him alone, and will be as surely correct if the two are shown together. A railroad employé who daily sees the two flags will not in general make this mistake when the test is repeated; we readily understand why. The color-blind has learned to apply the names, guiding himself by the difference in the intensity of the light. But he still continues destitute of any idea of color. He is always color-blind, and has simply learned an artifice.

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[1] De l'Achromatopsie ou Cécité des Couleurs. Dr. E. Goubert. Paris. 1867.

[2] De la Cécité des Couleurs. F. Holmgren. Stockholm. 1877.

"If Dr. Favre's claim that the railroad and marine *personnel* should be trained and exercised in telling colors is formally entertained, it can but lead to admitting the color-blind to positions in question; and, moreover, in the assurance that their congenital defect can be cured by the performance of their duty, the necessary training is looked out for. Such advice, we think, is positively dangerous, as it only deceives the authorities into the idea that the color-blind can cause no accident; whilst in reality their defect is where it was before, and, moreover, from this training becomes more difficult, I may say impossible, to discover, if a faulty method of testing is employed. In this point of view the training, far from averting, only increases the danger."

I think the necessity of discussing as far as I have what at first sight seemed perhaps only a medical opinion has now been made apparent. The very mistake Dr. Favre has been led into has also deceived railroad officials, who here and there have tested an employé suspected of color-blindness with the flags or lanterns used on their individual roads. It requires considerable argument and positive proof to convince a railroad superintendent that one of his men whom he has had cause to suspect, and has seemingly thoroughly tested, is after all color-blind. It is very difficult for him not to believe his employé has learned, or can be made to learn, to see colors as they appear to a normal eye. He, however, will be convinced against his reason, when the color-blind man is in his presence subjected to a proper scientific test applied by a competent specialist.

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RECENT PROGRESS IN THE THEORY AND PRACTICE OF MEDICINE.[1]

BY A. L. MASON, M. D.

Report on the Prevailing Diseases in Paris. — M. Ernest Besnier,[2] in a report to the Société médicale des Hôpitaux at Paris, after stating that the atmospheric conditions during the last three months of 1877 were not such as to exercise any unusual influence which was appreciable upon the prevailing diseases, although the temperature was somewhat higher than the average for that period during many preceding years, finds that the mortality at the hospitals for the final quarter and for the whole year 1877 was greater than in any one of the last five years. There were nearly two thousand more deaths in 1877 than in 1872. In spite of the mild weather the mortality from respiratory affections, especially from pneumonia, was greater than usual.

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[1] Concluded from page 374.

[2] Rapport de la Commission des Maladies regnantes. L'Union médicale, Nos. 14, 15, 16, and 21, 1878.

The writer regards diphtheria, like other epidemic diseases, as subject to fixed laws of evolution. Comparing the number of deaths with the number of persons attacked for several years, he finds that the mortality reaches its maximum in winter and its minimum in summer. The conclusion is that, as typhoid fever is a malady which is most prevalent during the late summer and the autumn, so diphtheria is essentially a disease of the winter. For example, in 1877, at Paris, the number of deaths among diphtheritic patients, having been eighty-three per cent. in the first quarter and seventy-nine per cent. in the second, fell to fifty four per cent. in the third and rose again to seventy-three per cent. in the fourth.

The author thinks that the recognition of this normal, habitual, and regular history of the disease, from year to year, eliminates much of the uncertainty with which many physicians have regarded it, and that they have been led to confuse the observations made in an exceptional outbreak, or in a single institution, with the real march of the malady. From a therapeutic point of view M. Besnier considers "errors of interpretation," in a disease from which the mortality varies regularly according to the season, as the cause of the numerous "therapeutical illusions," which are made evident by the failure of remedies that at other times have been supposed to give brilliant results.

The epidemic of 1877 is described as the most important in the number and severity of the cases which has ever been known in Paris. The invasion has not been sudden, and for more than ten years M. Besnier has made careful observations. In 1872, the year after the war, there were 1135 deaths from diphtheria; in 1873, 1164; in 1874, 1008; in 1875, 1328; in 1876, 1571; and in 1877, 2393. The epidemic has extended throughout the whole city with varying degrees of severity, the mortality ranging from 2.3 per one thousand inhabitants in the fifteenth arrondissement (Vaugirard) to 0.51 per one thousand in the ninth (Opera). This disparity was not found to be due to altitude, since it was remarked that three of the higher districts, Chaumont, Ménilmontant, and Montmartre, which ranked seventeenth, nineteenth, and fifteenth (in a scale of twenty) in mortality from typhoid fever, were second, third, and seventh in respect to the fatality from diphtheria. The action of density of population did not seem to be manifest, but in the opinion of the author indigence was the chief factor, as he had shown also by statistics in regard to cholera, variola, etc.

This was thought to be especially striking in diphtheria, since the poorest quarters usually contain most children, who are the chief victims of that disease.

In the various children's hospitals, for the last quarter of 1877, there were two hundred and forty-nine cases of diphtheria with one hundred and eighty-three deaths, a mortality of seventy-three per cent., against a death-rate of seventy-one per cent. out of a total of nine hundred and nineteen cases treated in the same months of the previous seven years. In three institutions fifty-four cases are mentioned in which tracheotomy was performed; rather more than one fourth of the number lived. At the Hôpital Sainte Eugénie, out of seventy cases thirty-one required this operation, which would indicate a greater frequency of laryngeal complications than usual, but as no distinction is made between croup and diphtheria the statistics may be open to criticism.

The author shows that typhoid fever in 1877 followed its usual course, as indicated by the annexed table, compiled from the hospital returns: —

	Cases.	Deaths.	
1st quarter,	806	130	= 16.12 per cent.
2d "	287	53	= 18.46 " "
3d "	488	128	= 26.02 " "
4th "	634	131	= 20.62 " "

The year 1876, which was marked by a very severe epidemic, gives 3158 cases and 759 deaths, a mortality of 20.4 per cent. For the past ten years, excluding 1870–71 (war, and siege of Paris), of 15,936 cases of typhoid fever treated in the hospitals 21.31 per cent. were fatal.

Diphtheria in Fayetteville, North Carolina, and Vicinity. — Dr. W. C. McDuffie[1] says that in the past twenty-five years diphtheria has prevailed as an epidemic but twice in the neighborhood of Fayetteville, once in 1862, and again in 1876, on both occasions choosing the summer for its invasion, reaching its height by October 1st and disappearing about the middle of November. The type of the disease was mild, the ratio of deaths never reaching 20 per cent., and the author advances the hypothesis that this comparative mildness may be due to the surrounding malarial influence, saying that the history of the disease "shows a greater virulence of symptoms in sections free from miasma than obtains where malarial disease exists." He considers croup and diphtheria as essentially distinct, the adventitious membrane being the only point of resemblance, and states that the sanitary regulations and surroundings were good both in town and country, and that a lack of hygienic precautions was in no instance the cause of the spread of the disease.

Fifteen Cases of Tracheotomy in Diphtheritic Croup. — Dr. R. G.

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[1] North Carolina Medical Journal, February, 1878.

Bogue,[1] surgeon to Cook County Hospital, reports at length fifteen cases of tracheotomy in diphtheria, with six successful results. There was no impairment of the voice in any of the cases. The ages of the patients were from two to ten years. There was no recovery under three. The tube was worn in the six successful cases forty-four, twenty-one, five, sixteen, one hundred and twenty, and eleven days respectively, the delay being occasioned in the longest-mentioned period (one hundred and twenty days) by paralysis of adjacent parts. In the fatal cases death occurred in from ten hours to sixteen days, in most instances within forty-eight hours. The writer regards the "so-called membranous croup" and "diphtheritic croup," as seen in Chicago, as the same disease, — diphtheria, — the essential difference being only in the place where the disease or membrane first locates itself. If in the pharynx, it is usually seen before the larynx is affected, but if seated primarily in the larynx the swelling and deposit of membrane may destroy life in a few hours. Early operation, with the use of an anæsthetic to allay spasm and avoid fright, is advised, and a moist, warm atmosphere, sustaining diet, and such local or general treatment as the circumstances may demand.

The Treatment of Typhoid Fever by Cold Baths. — Dr. Julliard[2] gives the results of his observations in fifty cases of typhoid fever treated by Dr. Chavanne in one of the hospital wards at Lyons, which had been arranged with special bathing facilities for fever patients. Owing to this fact the physicians of the Hôtel Dieu sent their worst cases there for treatment. Thirty-six of these fifty cases were treated systematically with cold baths after Brand's method, and the author allows him full credit for calling the attention of the profession to what was practically a new mode of dealing with fevers, the first results of which in Lyons were published by M. Glénard in 1874 in a series of fifty-two cases, all of which recovered. But the investigations of Schulze at Heidelberg, and of others, having clearly shown that there are contra-indications to as well as indications for cold bathing, which were not appreciated by Brand, mention is made of the conditions under which Dr. Chavanne regards this treatment as desirable: first, a continuous high temperature without remissions, and second, the ataxic state. Cold baths are not deemed necessary for patients whose temperature may reach a very high point, provided the remissions are regular and decided, the patient under these circumstances being compared to an aeronaut who ascends to heights incompatible with life, returning at intervals to breathe in the regions below. It is considered as proved that cold baths do not hasten the evolution of the intestinal lesions, and that their only incontestable effect is to induce a more remittent type of fever. The ordinary bronchial and pulmonary complications are not thought to be contra-indications, and it is regarded as essential that the bathing should begin at the earliest possible period after the development of those types of fever which are mentioned above as demanding it, a very difficult point to discriminate in the earlier stages. Although the symptoms which depend upon the high febrile action, — headache, delirium, somnolence, etc., — are often relieved with surprising rapidity, the final result is not always favorable, and, in illustration of this, three cases are instanced in which the primary effect of the baths was all that could be wished, but death ensued at a later period.

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[1] Chicago Medical Journal and Examiner, February, 1878.

[2] Lyon Médical, Nos. 6, 7, and 9, 1878.

The charge that this method of treatment is apt to cause (1) furuncular eruptions, (2) intestinal hæmorrhage, (3) neuralgias, (4) severe coughing fits, and (5) aggravation of preëxisting respiratory affections was not substantiated so far as to show that these complications or sequels could be attributed to the baths, although of the thirty-six cases there were slight eruptions in three, intestinal hæmorrhage in two, — one of which was fatal, — and a few cases of fleeting neuralgia. Of eleven patients suffering from chronic or preëxisting pulmonary difficulties, in one only did the progress of the disease (phthisis at the left apex, in the commencing stage) appear to be hastened by the cold baths. In this connection it is stated that Griesinger, Jaccoud, and other authors have observed that pulmonary phthisis often develops with unusual rapidity under the influence of an attack of typhoid fever.

Twenty-three of the fifty cases reported were between ten and twenty years of age, fifteen between twenty and twenty-five, eight between twenty-five and thirty, three between thirty and forty, and one was fifty-three years old. Headache and epistaxis, which in one instance required the tampon, were observed in almost all the cases. Gurgling and pain in the right iliac fossa were usual symptoms, though not always present, and a marked degree of meteorism was noticed in but thirteen cases, becoming extreme in three instances which presented grave complications, malignant icterus, suppurative parotitis and peritonitis. Diarrhœa supervened in all cases at some period, with the characteristic stools, though it was not always until the end of the first or the second week. Rose spots appeared in two thirds of the patients, but they were absent in some of the worst cases.

Six of the fifty patients died, a mortality of 12 per cent. Of the thirty-six cases treated with cold baths by Brand's method, six were fatal, or 16.6 per cent., which the author considers gratifying in view of the fact that those cases only were subjected to this treatment which presented either a high continuous febrile action or a marked tendency to ataxia at the outset. Moreover nineteen of these cases were sent by other physicians from the neighboring wards on account of the intensity of the symptoms; therefore it may be granted that, under circumstances more unfavorable than the average, these figures represent a rate of mortality not in excess of that noted by other observers as occurring in epidemics of moderate severity.

In the thirty recoveries with the use of cold baths the duration of the fever was in ten cases between fourteen and twenty days, in eleven between twenty and twenty-five days, in seven between twenty-five and thirty days and in two patients, thirty-one and thirty-three days respectively. Convalescence was in all cases rapid, and accidents were extremely rare. Relapses did not occur, though in a few cases there was from slight causes a rise in the temperature lasting three or four days.

The Lancet[1] says that 886 deaths from typhoid fever were registered in London in 1877, 105 more than in 1876. In 455 completed cases at the different fever hospitals the average rate of mortality was more than 20 per cent., the highest being 24 per cent. and the lowest 17.4 per cent. Assuming that 20 per cent. of the whole number of cases in London during the year were fatal, it may be calculated that 4430 persons had enteric fever.

The Use of Ergot in Typhoid Fever. — M. Siredey[2] gives an account of a young man of twenty years who recovered from a very bad attack of fever after the use of ergot. The patient entered the Hôpital Lariboisière on the tenth or twelfth day of the disease. The tongue was very dry and brown, the gums were covered with sordes, speech was difficult, and the ideas were confused. At night there was constant delirium, with subsultus and other nervous phenomena, great pain in the back of the neck, opisthotonos at times, and symptoms like meningitis. The next day the abdomen was retracted, and signs of collapse seemed to portend early death. M. Siredey, bearing in mind the success attained by M. Duboué (of Pau) in the treatment of ataxo-adynamic cases by ergot, prescribed two grammes of this drug to be taken during the day. On the following morning there was a considerable modification of the grave symptoms. The muscular twitchings had ceased, the abdomen was less drawn in, and the general condition was improved. The ergot was continued for three days, after which the indications of danger entirely disappeared and the fever ran its course with moderate intensity.

M. Duboué recommends ergot in typhoid fever for reasons deduced from its physiological action, and in one of his works[3] cites seven cases in which it was employed. Two were in the early stages and presented all the characteristic symptoms of the malady, but they got well so soon that it was thought that an error in diagnosis was possible. In three others ergot was not used until after all other medicinal resources

[1] February 23, 1878.

[2] Journal de Médicine et de Chirurgie pratiques, February, 1878.

[3] De quelques Principes fondamentaux de la Thérapeutique.

had been exhausted and the patients had reached an almost hopeless state. But they all recovered after taking from a gramme and a half to three grammes of ergot daily for about two weeks. Another, who presented grave ataxic symptoms from the outset, with delirium, trismus, carphologia, and intermittent pulse, took ergot for twelve days, the disease assuming a milder form and recovery following. Finally, a patient with typhoid fever, who was three and a half months pregnant, was treated with ergot for fifteen days, and got well without miscarriage, although she took a daily dose of a gramme and a half or two grammes of the drug.

PROCEEDINGS OF THE BOSTON SOCIETY FOR MEDICAL OBSERVATION.

O. W. DOE, M. D., SECRETARY.

DECEMBER 17, 1877. *Tumor of the Cerebellum.* — DR. WEBBER read a paper upon this subject. (Reserved for publication.)

DR. ELLIS asked the reader if he considered the pain to be caused by pressure upon the nervous structure of the brain.

DR. WEBBER replied that he thought it dependent upon pressure on the tentorium and the meninges; the former binds down the cerebellum so closely that even a slight increase in size exerts considerable pressure, and, the membranes containing nerves, the pressure is very painful. He said that when the cerebellum is affected, patients seem to exhaust language in trying to find expressions sufficiently strong to describe the intensity of the headache.

DR. FISHER asked if hallucinations of sight are as marked in affections of the cerebellum as when other portions of the brain are affected.

DR. WEBBER answered that he had only once seen hallucinations mentioned as a symptom in tumor of the cerebellum, and then it was not stated whether they related to sight especially. Intellectual and emotional disturbances he thought were more particularly noticed when the cerebral hemispheres were affected.

DR. STEVENS mentioned the case of a lady twenty-three years of age, who died in September last, and at the autopsy a tumor the size of an English walnut was found occupying the floor of the fourth ventricle. A year before death she sought medical advice on account of severe headache and impaired vision. The diagnosis of retinitis was made at the Eye and Ear Infirmary by Drs. Shaw and Hay. Four weeks afterwards her sight had become much worse, and two months later she was totally blind. At this time she became pregnant, and suffered severely from headache and vomiting. Occasionally there were convulsions, and in walking she would often fall backwards. There was no deafness at any time. A week before death she was delivered of a living child, no one in the room knowing she was in labor until the cries of the child attracted their attention. Intense headache, with almost constant screaming for four days before death, and loss of control of the sphincters followed.

DR. FITZ described the tumor as being a vascular sarcoma. There was also an inflammatory condition of the meninges. The lateral ventricles were fully distended with serum. The uterus presented nothing abnormal. No disease was found in any other organ.

Arsenical Poisoning. — **Dr. Wood** showed a stomach twenty-two days old, which still presented the marks of inflammation, and the effect of arsenic in preserving the tissue, although the specimen had been kept in a heated room. The patient, a female aged seventeen, took the poison with suicidal intent, and died seven hours after the first symptoms manifested themselves, and probably about eleven hours after taking the poison. Four hours before death she was in severe pain, attended with diarrhœa. About a pint of blood, with very little food, and a large quantity of undissolved arsenious acid crystals, held together by mucus, were found in the stomach. When the organ was first opened, there was slight ulceration seen near the cardiac extremity. There was also some redness of the upper part of the small intestine. The cells of the liver were cloudy, and cleared up somewhat after the addition of acetic acid, showing commencing fatty degeneration.

JANUARY 7, 1878. *Auto-Inoculation.* — **Dr. Wigglesworth** read a paper upon auto-inoculation, especially of vegetable parasites of the skin. (Reserved for publication.)

Dr. Garland asked the reader if it was now an established fact that a secondary true chancre can be produced from a primary chancre upon the same person by inoculation, saying that in Zeissl's ward in Vienna he saw a patient who presented a primary hard chancre on the penis, a copper-colored eruption on the body, and two secondary ulcers, — one on each arm, — which were the result of inoculation of pus from the primary sore. Zeissl said that he could not assert that the secondary ulcers were true chancres without testing them by inoculating their pus upon a healthy person.

Dr. Wigglesworth replied that pus obtained by the mechanical irritation of the induration, constituting the initial manifestation of syphilis, may be inoculated upon the bearer of such primary lesion as upon a healthy person, as may any other pus, and the result may be an ulceration, which as in the case mentioned, on account of the constitutional affection already existing, may subsequently take on induration. He doubted if pus thus obtained from a primary lesion would produce induration and constitutional infection upon a healthy subject unless blood was also mixed with the pus.

Dr. Bowditch inquired why the so-called inoculation of syphilis had lost its reputation in Austria.

Dr. Wigglesworth responded that it was because the theory was based upon error, and the desired results had not been obtained. The idea of syphilization originated over twenty years ago, at a time when the distinction was not made between constitutionally infecting lesions and those merely local in their action. The inoculation of real syphilitic virus had been but very rarely performed, especially since the time of Waller, of Prague. The inoculation of the merely locally irritating matter from soft sores had been pushed to extremes, especially in Norway under Professor Boeck, and during two separate visits made to Christiania Dr. Wigglesworth had seen several examples of patients literally covered with ulcerations thus produced. The result of these inoculations is a merely temporary local immunity from possibility of further inoculation of this sort, namely, with the locally irritating material, the wearied skin refusing longer to respond to the stimulus of inoculation. After a period of rest it will again respond, and more local sores may be produced upon the unfortunate victim. Much physical suffering, reduced general health, and permanent disfiguration are the only results of syphilization. A permanent or even temporary immunity from syphilis, that is, constitutional disease, is of course not acquired. Dr. Wigglesworth had not found a single adherent of the theory among Professor Boeck's own fellow-physicians and assistants.

Syphilization, so-called, has, then, nothing to do with syphilis, and as a prophylactic of this disease possesses the same value as cantharidal blistering or tartar-emetic pustulation, while as treatment it simply adds a small amount to the great evil the patient is already enduring. True syphilitic poison cannot be introduced into a human system already affected, and even could this happen it would only be adding to the evil already existing. The experiments of Hebra and Sigmund show practically and definitely that as a cure of syphilis syphilization has no value.

The process has not a feature in common with vaccination. Inoculation with pus, produced by the mechanical irritation of a syphilitic lesion, primary or otherwise, is not necessarily syphilitic inoculation. A vast number of questions in regard to syphilis can never be satisfactorily settled until both the subjective and objective factors of the problem can be completely isolated, that is, until the pure virus can be inoculated upon healthy individuals. This can be done by placing such criminals (under sentence of death) as desire the alternative at the disposal of investigators for purposes of investigation. There is no suffering involved, the lease of life is prolonged, and subsequent personal suffering, or possibility of communication of the disease to others is obviated by the final execution of the death penalty. Even were a subsequent pardon granted, lapse of time would prevent communicability.

Dr. Bowditch asked whether ordinary warts, as met with upon the hands, can be regarded as contagious, saying that he had recently seen a teacher whose hands were covered with warts, and who had never been troubled with them until she had children in her class similarly affected.

Dr. Wigglesworth answered that one person could not communicate the affection to another by direct contact. The process consisted anatomically of an hypertrophy of the papillæ of the corium, upon which lie thickened layers of the horny epidermis. The disease must therefore require time for its development, which would involve as cause the prolonged contact of some irritating material, as, for example, the secretions causing the so-called venereal warts. The causes of warts in general are, however, not well known, and no credence can be given to popular beliefs. The treatment is excision, though they may disappear as they come, without treatment, and upon the observed fact of their disappearance we may place more trust than upon the theories regarding their origin. Thus honest and truthful people have stated that as a "curious coincidence" their warts have disappeared soon after their having been "charmed" by some one, "just by way of a joke." Should this be indeed true, it would be a peculiar instance of the force of the imagination upon the growth of tissues.

Malignant Disease of the Spine. — DR. HILDRETH reported the following case: Mrs. N., about forty years of age, married eleven years, the mother of one child, healthy, of good family history, was first seen March 16, 1872, when the following history was obtained. Two years before she had a nodule removed from the breast, from which she made a good recovery. About three months ago she began to have pain in the back, but had supposed it rheumatism, and used domestic remedies accordingly, yet the pain had steadily increased. She walked a little stooping, generally with a cane, and had the appearance of one suffering from lumbago. There was no tenderness from pressure over the spinous processes of the vertebræ.

From that time till May 17th, the pain, with inability to walk, steadily increased. Tenderness was developed over the spine. Violent pain was experienced along the course of the anterior crural nerve and the great sciatic, which was generally worse at night, and required large doses of opiates to relieve. From about this time paralysis of the bladder and lower bowel began, which continued till the time of her death, June 6th. The latter part of her illness she appeared like one suffering from fracture of the spine in the pain she experienced when any attempt was made to move her.

The autopsy showed a destructive process which had gone so far as to destroy almost wholly the bodies of the last dorsal and lumbar vertebræ. There were cancerous nodules over the chest and abdomen, and in the cicatrix where the nodule was taken from the breast. The spine was not removed and subjected to examination, but it was carefully examined *in situ*, and no doubt was expressed by the physicians present that the disease of the bodies of the vertebræ was of the same nature as that of the breast which was removed about two years before. None of the other organs of the body showed the presence of malignant disease.

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THE PHYSIOLOGY OF MIND.[1]

THIS enlarged edition, in a new form, of a well-known and valuable work will be welcomed by a large circle both of professional and non-professional readers. Its subject matter being of such vital importance from a social point of view as well as to the individual, no intelligent person should fail to read it. The work is a complete and scientific treatise, containing the results of the research of the last ten years, — a decade which will always be memorable for a rapid advance of knowledge in this department. Much space which was originally devoted to a defense of the physiological method in the study of mind is now available for this new material, in consequence of the general adoption of that method. It is almost as much a treatise on the evolution as on the physiology of mind, so thoroughly does the author present his subject from that stand-point. While showing much independence of thought and originality in treatment, he is also much indebted to Spencer for his arguments and to Darwin among many others for his facts. The peculiar merit of the work, we think, grows out of the writer's thorough acquaintance with all the phases of mental disease and social and moral degeneration, in which are seen a reversal of the processes of evolution and a complete analysis of the normal operations of the mind.

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[1] *The Physiology of Mind.* Being the First Part of a Third Edition, revised, enlarged, and in great part rewritten, of the Physiology and Pathology of Mind. By HENRY MAUDSLEY, M. D.

We can pass rapidly over the first three chapters, which treat of the importance of the physiological method and of the evolution of the nervous apparatus in animals and man. In the reflex functions of the spinal cord are found the basis and type of all the higher nervous and mental functions. Chapter IV., on the Sensory Centres and Sensation, is largely rewritten. The usual independence and automatic character of the sensori-motor functions is insisted on, and very fully and convincingly shown by arguments drawn from the operations of instinct in animals. Dr. Maudsley thinks there is no evidence of intelligence or volition in the sensori-motor acts, and that consciousness is not a necessary factor. He considers such operations of the organic machine as purely physical as those of a steam-engine. He shows throughout the work a special animosity against consciousness, derived from the false testimony it has borne in support of various systems of sham philosophy, which it is in part his object to demolish.

Chapter V., on the Supreme Cerebral Centres and Ideation, includes the results of recent research upon the functions of the convolutions in animals. Dr. Maudsley thinks that we are warranted in concluding from these experiments that there are in the cortical layers of the hemispheres motor areas which have definite connections with the coördinating centres in the subordinate motor ganglia. Although the sensori-motor ganglia may suffice for all forms of movement after the removal of the hemispheres, when these are present the impressions of some of the sensori-motor acts are carried centripetally to the cortical centres, where they are, as it were, echoed or repeated, and the *feeling* of their innervation takes place. He traces the growth of simple ideas into those more complex and abstract, in animals, infants, and savages, and shows the operation of idea on movements, voluntary and involuntary, conscious and unconscious, on the sensory ganglia, on the functions of nutrition and secretion, and on other ideas in reflection and deliberation. He treats at length of the association of ideas as determined by the inherited nature and the special life experience of the individual. He thinks the power of mind over the succession of its states is extremely limited, and that to make states of consciousness synonymous with states of mind is almost as unwarranted as to assert that all bodily acts are conscious.

Perhaps the chapter on the Emotions is of the most immediate value to the medical reader, since they are based in the organic life. They betray their physical nature in the name itself. They act more powerfully on the organism than ideas, because they represent a more violent internal movement, or *commotion*, as the old term was, in the nervous element. Emotion is the equivalent in a higher kind of tissue of the self-conservative impulse, immanent in all living matter, by which it rejects what is hurtful and attracts what is nutritive and favorable to growth. This reaction, according to the character of the stimulus, is as natural and necessary to any organic element as the reaction of two chemical compounds. When this impulse or appetence of nerve element is manifest in consciousness, we know it as desire, craving, instinct, or appetite.

The desire for food and drink and the sexual instinct are the strongest motives of action, and in the latter case we can watch the evolution of a new appetite when at the age of puberty new organs begin to exert their physiological influence on the brain. Every disturbance of the *cœnæsthesis*, or emotional equilibrium, leaves its trace in the convolutions, and the character of each emotion is determined by the nature of the external stimulus or the internal state, as well as by the condition, original or acquired, of the nerve element. When we consider particular desires we find always a conception of the thing desired, each idea having its special feeling, unless so indifferent as not to excite a consciousness of its emotional character. Emotions express themselves in muscular movements, in nutrition and secretion, and in ideational activity. The study of temperament is interesting in this connection, and also that of physiognomy. The emotional character of a man is as plainly told in his outward aspect as is the direction of the prevailing wind by the branches of a tree.

The moral sense, which is the highest and latest acquisition of the race, Maudsley traces to the instinct of self-propagation. In the act to which this instinct impels, although mostly selfish, he finds the root of the altruistic feeling. It is a social act in that it requires the coöperation of two individuals, and the love of offspring develops into a regard for and a recognition of the rights of family, tribe, and state. The standard of international morality is yet very low. Spencer derives the moral feeling directly from the instinct of self-preservation, of which the other instinct would seem to be an outgrowth, the individual striving to live, at least, in his offspring. The moral sense is in its formation, according to our author, a matter of organic evolution, and its destruction a matter of organic dissolution.

We have no space to present even an outline of our author's forcible argument against the metaphysical conception of will as an entity of autocratic power, acting from above and outside the cerebral organization. There is no more an abstract will than there is an abstract consciousness. Each particular mental act has its own quality in these respects, according to its organic nature, and the sum of these acts makes the individual mind, with *its* peculiarities. Will, like every other natural force, has its cause. While admitting the utility of the doctrine of free will for the ruder ages and races of mankind, he thinks the time has come for a better understanding of it.

The domain of will is strictly limited in many ways. For instance, volition differs in quantity and quality with the preceding train of associated ideas. The design in any particular volition is the result of a gradually effected mental organization, a physical necessity not independent of nor transcending experience. Volition has no power over the movements essential to life, and cannot effect the so-called voluntary movements until they have been acquired by a slow and labored practice. It cannot then control the individual muscles, or will the means, but only the event or final action. We seem to have power to will arbitrarily certain indifferent actions, as to touch some one of the squares on a chess-board, but, as Jonathan Edwards asserts, even in this act the will is and must be directed by some preponderating or determining motive. We touch the square the eye happens to light on, usually. How much less free is the will in its choice among matters of moment!

Maudsley asserts that the will has no power over the formation of ideas or their association. It cannot call up or dismiss a particular train of thought except by the most indirect methods. Volition is, in fact, a result and not a cause. It is the name given to the final or residual impulse of a train of associated ideas. There are as many centres of volitional reaction as there are of ideas. The consciousness is particularly excited at the inception and close of the ideational process. What begins as desire comes out after such reactions as the particular cerebral organization requires under the new name of volition. In brief, we will what under all the circumstances we desire, and being specially conscious of the desire we think our will is free because we do what we wish to do. A falling stone, if conscious of a desire to fall, would think it fell of its own volition.

The final chapters, on the Motor Centres and Actuation, and on Memory and Imagination, we can mention only by name. We have been unable to give more than the merest outline of what from beginning to end is a sustained and powerful presentation of the physiology of mind in accordance with the latest scientific research. We have also been obliged to omit all the facts adduced in support of its line of argument. The author leaves a few questions unanswered which will constantly recur to the most simple-minded reader. For instance, whence comes the fundamental property of organic matter by which it chooses the good and rejects the hurtful? And admitting the limitations of consciousness, what is its nature, such as it is, and *who* is it that is conscious?

T. W. F.

THE SEWERAGE OF BOSTON.

The two objections to the proposed main-drainage scheme for Boston have been disposed of in a thoroughly satisfactory manner.

It has never been supposed by any gentlemen who have carefully investigated the matter that the new intercepting sewer would, of itself, affect the level of the ground-water, for it was to be built with such impervious walls as to forbid its acting as a drain for the surrounding soil. The sewerage commission, however, thought that it would so act indirectly, by preventing the accumulation of sewage in the old sewers at high tide, and that it would thereby allow a more complete soakage of soil-water through their walls, — to such a degree, in fact, as to drain the whole territory of the Back Bay and reduce the level of the ground-water somewhat, although not below grade 5 (that is, five feet above mean low-water mark). In some few places that would involve exposure of the tops of the piles on which the houses are built, and would cause them to rot to such an extent as to require new foundations in a certain number of cases. But it should be said that no houses would have been endangered, on that supposition, where the requirements of the inspectors of buildings had been carried out, and where the piles were cut off as low as grade 5. Some of the houses early built are placed on piles whose tops are as high as grade 6, 7, or even 8; and the extension of the filled area has gradually brought the surface of the ground-water near by to continually lowering levels.

In such cases there will be some rotting of the foundation piles, independently of any action of the sewers; and the houses will inevitably begin to totter, sooner or later, unless this evil is corrected. An evil, of course, it is; but the expense of "underpinning" a house need not exceed four thousand dollars, and no one certainly should complain of such an outlay provided he thereby got a drier soil upon which he and his children might live, and gained a constant discharge to a safe distance of the filth which is now putrefying within a stone's throw of his chambers.

The experiments, lately made by Mr. Eliot C. Clarke, by pumping the sewage of the Berkeley Street sewer for a period of two months, during that portion of the day when the rising of the tide obstructs its continuous flow, have shown conclusively that the level of the soil-water is not at all likely to be affected by the new system, at least not more than a few inches. These experiments were conducted at a time of the year when the ground-water is at its highest, and when it would be most easily affected by the sewers if at all. After a heavy rainfall the soil-water falls in a few days very much more than by two months' pumping from the sewer. The sewerage commission have frankly acknowledged that they were in error on this point, and the question may now be considered as settled.

The second objection to the new sewerage system, that the sewage discharged at Moon Island will cause obstructions and offensive deposits in our harbor, has proved to be not well grounded. The only shadow of support for such a theory has been the statement that ten times the amount of the Boston sewage, discharged a dozen miles below London, into a river less than half a mile wide, and at a point thirty miles from the sea, had caused serious obstructions in the Thames. It is impossible to say that eight hundred tons of solid matter a day have not added at all to the sources from which the shifting banks have been formed near the mouth of the Thames. But the best engineers have decided that there has been no increase in the yearly deposit since the construction of the great sewers, and even the late Dr. Letheby, formerly chemist to the very board that is now making the complaints to which we have referred, has shown that there is no reason for supposing that the sewage of London is in the least obstructing the river or adding to the banks in it. There are serious objections to emptying one hundred and twenty million gallons of filth into a main ship channel, which is also a great thoroughfare, and for that reason the sewer outlet in Boston was placed at Moon Island rather than at a place in some ways preferable, namely, off Castle Island or at the extreme point of South Boston. For the same reason the engineers of the Metropolitan Board of Works in London will undoubtedly, erelong, be compelled to cleanse their sewage before casting it into the river.

As we have said, the only serious objections to the new sewerage system for Boston are disposed of; the new works are placed under the charge of our city engineer, who is one of the most accomplished men of his profession, now on his way from Europe, where his varied experiences have not led him to modify at all his general plans for Boston. We may be assured that the work will begin at once with true American speed, and that our city will soon be put on the list of those places which have sewerage as good as modern science can furnish and the circumstances of the case will admit.

The difficulties in the way of rendering our present sewers what they should be are very great. With all the energy, knowledge, and ability of our faithful superintendent of sewers, he has the evils of a bad system to contend against, which has made our sewers the miserable patchwork of which the best that can be said is that they are out of sight, so as not to offend all of our senses at once. That they are better than the underground passages of Cincinnati and Philadelphia, which tumble in of their own weight, and not so bad as some of the old, extraordinarily devised filth-traps of New York, we do not deny, but that many of them are far below the standard which we may reasonably demand is an extremely mild statement of the case in Boston. It is only thirty-five years ago that the first scientific sewerage of any city was begun. Up to that time, in many places, and even until now in some American cities, an education as an engineer was not thought necessary to qualify a man, in the eyes of city councils, for undertaking one of the most difficult problems in sanitary engineering. Indeed, under the recent *régime* at the City Hall, from which we so fortunately escaped, an election of superintendent of sewers nearly resulted in the choice of a man who had no scientific education as an engineer. The result is familiar to us all: temporizing measures are adopted all over the city; gross defects in the sewers, although familiar to the sewer department, are not rectified until interested citizens happen to find them out, when a strong pressure sometimes accomplishes, finally, what should have been done by the officers whose duty it is to ascertain and to correct such evils at once. Instead of a system of sewerage we have disjointed sewers, some bad, some good, none the best that modern knowledge and skill can furnish.

It is easy to see what should be done in the matter. Our city engineer has all the scientific knowledge which we can require; his familiarity with the modern works for the best sanitation of cities has just been supplemented by a visit to the leading places of Europe, where he has also had the opportunity of meeting the first engineers of France, England, and Germany; the intercepting sewerage system is placed directly under his charge, and the only way of securing a thoroughly satisfactory administration of our water-supply and sewerage departments is to place all under one head. Any other solution of the question must end in more or less marked failure to secure all the benefits from a plan, the importance of which is considered so great that Boston is about to expend four million dollars in its accomplishment. If a board of public works is ever established here, the plan which we propose would probably be an essential feature in it, and need in no way interfere with its early appointment.

MEDICAL NOTES.

— Dr. William B. Morris died at his house in Charlestown on Saturday, March 16th, after an illness of several months. He was one of the sons of Commodore Morris, so distinguished in the history of the navy, who died in Washington in 1856, where his widow still survives at an advanced age. Dr. Morris was fifty-two years old, and had spent the greater part of his professional life in Charlestown. He was a graduate of Brown University in 1846, and received his medical education at Harvard, afterwards passing some time in study at Paris and other European schools. In the practice of his profession he met with marked success, and his independent character and noble qualities of mind and heart, combined with sound judgment, technical skill, and varied experience, gained for him the confidence and affection of his patients to an extent which was as rare as it was enviable. With many if not most of them his place can never be filled, and among his professional associates and wide circle of attached friends sorrow for his untimely end will be deep and lasting.

— In the New York *Medical Record* for March 2d, Dr. J. G. Richardson describes an original and interesting method of counting the blood corpuscles.

— The College of Physicians of Philadelphia has abolished its fee bill. The latter has practically for a long time been a dead letter.

— By private correspondence we learn that the new system of education in the medical department of the University of Pennsylvania has not only paid all guaranteed salaries, but has provided ample means for the laboratories, and created a surplus of $2300.

— Various journals allude to MM. Bouchut and Dubrisay's enumeration of the blood corpuscles in diphtheria. In a communication to the Paris Academy of Science, these gentlemen stated that, having counted the corpuscles by Hayem's process, they found that in diphtheritic angina the number of white corpuscles is augmented, while the red corpuscles are diminished in number. The increase of white corpuscles varies directly with the gravity of the disease.

BOSTON CITY HOSPITAL.

SURGICAL CASES OF DR. GEO. W. GAY.

Traumatic Stricture of Urethra; Perineal Section; Relief. — H. H., laborer, aged twenty-two years, entered the hospital September 4, 1877, unable to pass any urine by the penis, it all coming from a fistula in the perinæum. A bank of earth had fallen upon this patient three months before, and he was told that his pelvis was fractured. At all events he had complete retention at the time, and the surgeon was obliged to open the perinæum to relieve the bladder, as no instrument could be passed through the urethra.

When he entered the hospital the perineal wound had contracted so much that micturition was difficult and painful. This was easily remedied for the time being by passing an elastic catheter every day or two through it into the bladder. No instrument could be passed through the urethra.

The question to be decided in this case was whether an effort should be made to reëstablish a communication between the two portions of the urethra, or whether the patient should be taught to keep the perineal opening dilated, and pass his urine in that way during the rest of his life. Mr. Cock reported cases several years ago, in one of which a man had passed his water through a perineal fistula for twenty years with little inconvenience.

Knowing the obstinate tendency of traumatic strictures to contraction in spite of the best directed efforts to keep them dilated, we did not urge an operation upon this patient, but the matter having been fully explained to him he was allowed to choose his treatment. He decided to try an operation.

September 21st. The patient having been placed under ether the urethra was opened in front of the stricture by cutting down upon a director. The canal was entirely obliterated for the space of an inch, so we were obliged to connect the two portions by an incision extending as nearly as possible in the direction of the normal urethra.

An elastic catheter (No. 10) was fastened in the bladder and changed every third day. This instrument was worn continuously for nearly four months, when the perineal wound was nearly closed, scarcely anything coming out of it during micturition. He was discharged a few weeks later, able to pass a good stream of water, and told that probably the stricture would require occasional dilatation as long as he lived.

Stricture of Urethra; Retention relieved for Four Days by aspirating the Bladder; Internal Urethrotomy. — P. M., aged twenty-eight years, has been more or less troubled with a stricture for thirteen years. It resulted from a gonorrhœa contracted at the age of fourteen. He has had several attacks of retention, which have heretofore been readily relieved with a catheter.

He entered the hospital August 22, 1877, having passed no water for twenty-four hours. The bladder was distended to the umbilicus, and he was suffering acutely. The patient was given a dose of opium, placed in a hot bath, and gentle efforts were made for a few moments to pass a catheter. These all failing to relieve him the bladder was punctured above the pubes, and emptied with the aspirator. Two leeches were applied to the perinæum, and followed by a poultice. These measures afforded great relief to the tenderness in that region. Aspiration of the bladder was performed nine times in four days.

On the 26th the patient was etherized, and on being examined with acorn-pointed bougies was found to have two strictures, one about two inches from the meatus, the other in the bulbous portion of the urethra. Both constrictions were freely divided with a urethrotome, and an elastic catheter was fastened in the bladder for two days. To guard against "urethral fever" ten grains of quinine were given twice a day.

The patient was discharged in nine days able to pass his urine freely and easily. A month later a No. 10 steel sound could be readily introduced into the bladder, and, with the exception of a cystitis from which he had suffered for a long time, he was very comfortable, and able to do as much work as usual. He was told to have his strictures dilated as often as necessary to maintain a good stream of water.

Fracture of Ribs; Abscess at Point of Fracture; Aspiration; Recovery. — C. M., about twenty-eight years of age, entered the hospital August 1, 1877. Three weeks before he had fallen overboard and received a fracture of the seventh and eighth ribs near the angle on the left side. He had rubbed some liniment on the chest, but had had no other treatment. No history of pneumonia or pleurisy.

At the point of fracture was a broad, fluctuating swelling, from which two ounces of thick, yellowish pus were drawn with the aspirator. A poultice was applied. The next day he had a chill. Three days later he began to cough

up matter resembling that drawn from the abscess. This was attended with fever and malaise. Six days after the first aspiration the abscess was punctured again in the same manner, and two ounces more of bloody pus were removed. This operation was soon followed by bloody expectoration, chills, sweats, etc. The temperature never went above 100° F. A week after the last tapping the symptoms began to subside, and the patient was discharged August 25th, nearly well.

This case is of interest as showing an occasional result of not treating a fracture of the ribs properly. This patient neglected his injury; the ends of the broken bones were constantly rubbing upon each other, and irritating the soft parts in the vicinity until suppuration was set up, which, while we were considering the plan of making an external opening, found a vent through the bronchi. Soon after this took place the symptoms began to subside, and the patient got well.

COMPARATIVE MORTALITY-RATES.

	Estimated Population, July 1, 1878.	Deaths during week ending March 16, 1878.	Annual Death-Rates per 1000 living.		
			For the Week.	For the Year 1877.	Mean of ten Years, '68-77.
New York.	1,093,171	483	22.97	24.32	28.71
Philadelphia.	876,118	300	17.80	18.80	21.54
Brooklyn.	549,438	178	16.85	21.51	25.50
Chicago.	460,000	144	16.28	17.83	22.39
Boston.	375,476	132	18.28	20.10	24.34
Providence.	100,000	29	15.08	18.81	19.20
Lowell.	55,798	20	18.64	19.09	22.50
Worcester.	54,937	28	26.51	14.07	22.30
Cambridge.	53,547	18	17.47	18.69	20.83
Fall River.	53,207	17	16.62	21.35	24.96
Lynn.	35,528	7	10.25	20.42	19.67
Springfield.	33,981	6	9.19	16.04	19.77
Salem.	27,140	15	28.74	20.38	21.15

Suffolk District Medical Society. — A special meeting will be held at the rooms, 36 Temple Place, on Saturday evening, March 30th, at seven and a half o'clock. The following papers and cases will be read: —

Dr. A. N. Blodgett, Carcinoma of the Conjunctiva, a Rare Form of Eye Disease. Clinical History by Dr. H. Derby.
Dr. D. Hunt, Myopia.
Dr. Chadwick will show a new Examining Table.
Dr. J. B. Ayer, Case of Cerebral Syphilis, with Persistent Hallucinations of Hearing.
Dr. William Read, Case of Tetanus. Diphtheria. Knot in the Umbilical Cord.
Dr. J. W. Keene, Embolism of Left Vertebral Artery. Specimen.
Tea, etc., at 9 o'clock.

Books and Pamphlets Received. — "What am I?" Valedictory Address to the Graduates of the Medical Department, University of Louisville. J. M. Bodine, M. D., Professor of Anatomy and Operative Surgery of the Eye, and Dean of the Faculty. 1878.

On the Source of Muscular Power. By Austin Flint, Jr., M. D. New York: D. Appleton & Co. 1878. (For sale by A. Williams & Co.)